

[0045] Fig. 13 is a flow chart illustrating a portion of the flow chart in Fig. 11 in greater detail; and

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3-25-05 [0046] <sup>a</sup><sub>λ</sub> Fig. 14 is a schematic diagram illustrating a helical data subset corresponding to a gantry scan range for the center detector in a detector row during a half scan required to generate a single thin slice image while Fig. 14b is a schematic diagram illustrating a data subset corresponding to a gantry scan range for the center detector in a detector during a scan required to generate a thick image using a z-smoothing function.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

### [0047] A. Hardware

Referring now to Fig. 1, a CT scanner for use with the present invention includes a gantry 20 having an opening (i.e., defining an imaging area) supporting an x-ray source 10 oriented to project a fan beam 40 of x-rays along the beam axis 41 through a patient 42 to a supported and opposed detector array 44. The gantry 20 rotates to swing the beam axis within a gantry plane 38 defining the x-y plane of a Cartesian coordinate system. Rotation of the gantry 20 is measured by beam angle  $\beta$  from an arbitrary reference position within the gantry plane 38.

[0048] A patient 42 rests on a table 46 which may be moved along a translation axis 48 aligned with the Z-axis of the Cartesian coordinate system. Table 46 crosses gantry plane 38 and is radio-translucent so as not to interfere with the imaging process.

[0049] The x-rays of the fan beam 40 diverge from the beam axis 41 within the gantry plane 38 across a transverse axis 50 generally orthogonal to both the beam axis 41 and the translation axis 48 at a fan beam angle  $\gamma$ . The x-rays of beam 40 also